

Identification of resistant sources to leaf rust and powdery mildew disease in oats

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Abstract:

A collection of 120 different accessions of oats from different countries in the region were used in this study to find new sources of resistance to oat leaf rust, and powdery mildew and to characterize the resistance to rust in oats under controlled conditions to study the components of resistance to the macroscopic level. A local wild accession collected from the experimental farm of the Faculty of Agriculture at Tulkarm, Palestine was used as a susceptible control. Accessions were sown in November 2008 in three complete randomized blocks. Each accession was represented by 25–30 seeds in a single row, 1 m long per replicate. A spreader row, of the local accession, was sown every five accessions of the collection as a spreader and control. Disease severity (DS) was estimated three times during the growing season as the percentage of leaves covered by the pathogens. These 3 evaluations were used to calculate Area under Disease Progress Curve (AUDPC). The susceptible local accession (control accession) showed 56% DS (100% AUDPC) of powdery mildew. DS ranged from very high to very low, and the frequently distribution was markedly skewed towards high DS. During the same growing season the susceptible local accession (control accession) showed 48% DS (100% AUDPC) of rust. DS of rust ranged from very high to very low, and the frequently distribution was markedly skewed towards low DS. Nearly half of the collection displayed AUDPC < 50%. Thirteen of them, with AUDPC ≤ 20% (10.8% of the collection), were selected to study their reaction to leaf rust at seedling stage. These resistant accessions were selected and grown in the field to obtain seeds for further studies.

Key words: *Blumeria graminis* f. sp. *avenae*, Oat, partial resistance, *Puccinia coronate*,